

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) Apparatus for use in data retrieval, comprising:
a hash value generator configured to generate having outputs for an index value and a signature value, based on input data,
a first memory array configured to receive having an input coupled to the index value as an address, said first memory array is further configured to output, in response to said index value, a data unit comprising a plurality of signature values arranged in respective positions in said data unit output,
a comparator configured to receive having inputs coupled to the signature value and said data unit an output from the first memory array, the comparator is further configured to compare the signature value with the plurality of signature values of said data unit, and if a match is found, said comparator is further configured to generate said address of said index value and the position corresponding to the having an output for a position of a matching signature values, and
a second memory array configured to receive said address of said index value and the position corresponding to the matching signature values and, in response thereto, output payload data, having inputs coupled to the index value output and the output of the comparator, the second memory array being configured to provide data being retrieved.
2. (Currently Amended) The apparatus of claim 1, wherein the first memory array comprises a plurality of entries, each entry having fields to store signature values of respective data units.
3. (Original) The apparatus of claim 1, wherein the second memory array comprises a plurality of entries, each entry having fields to store payload data responsive to an input data value to be input to the hash value generator.
4. (Original) The apparatus of claim 3, wherein entries of the second memory array further comprise a field to store a copy of input data to which the payload data relates.

5. (Original) The apparatus of claim 4, further comprising a comparator coupled to the input of the hash value generator and to the second memory array.
6. (Original) The apparatus of claim 1, wherein an output of the comparator includes a position indicator indicative of a field in an array entry that causes a match with a signature value.
7. (Original) The apparatus of claim 1, further comprising an input to the hash value generator
8. (Original) The apparatus of claim 1, wherein the hash value generator has inputs for IP source and destination addresses and TCP source and destination port designators.
9. (Original) The apparatus of claim 8, wherein the IP source and destination address have a bit length of 32.
10. (Original) The apparatus of claim 8, wherein the IP source and destination address have a bit length of 128.
11. (Currently Amended) The apparatus of claim 1, wherein the index value and signature value[s] are selected from non-overlapping portions of a common hash value.
12. (Original) The apparatus of claim 1, wherein the first memory array is provided in SRAM and the second memory array is provided in DRAM.
13. (Original) The apparatus of claim 1, wherein the first and second memory arrays are commingled members of a common memory system.
14. (Currently Amended) Apparatus for use in data retrieval, comprising:
a hash value generator configured to generate ~~having outputs for~~ at least two index values and a signature value,

for each index value ~~output~~ from the hash value generator:

a first memory array configured to receive the index value as an address, said first memory array is further configured to output, in response to said index value, a data unit comprising a plurality of signature values arranged in respective positions in said data unit,

a comparator configured to receive the signature value and said data unit from the first memory array, the comparator is further configured to compare the signature value with the plurality of signature values of said data unit, and if a match is found, said comparator is further configured to generate said address of said index value and the position corresponding to the matching signature values, and

a second memory array configured to receive said address of said index value and the position corresponding to the matching signature values and, in response thereto, output payload data.

~~a first memory array having an input coupled to the respective index value output,~~

~~—— a comparator having inputs coupled to the signature value and an output from the first memory array, the comparator having an output for a position of a matching signature value, and~~

~~—— a second memory array having inputs coupled to respective the index value output and the output of the comparator, the second memory array being configured to provide data being retrieved.~~

15. (Original) The apparatus of claim 14, wherein entries of the first memory array comprise a plurality of fields to store signature values.

16. (Original) The apparatus of claim 14, further comprising a comparator having a pair of inputs coupled respectively to an output of the second memory array and to an input of the hash value generator.

17. (Original) The apparatus of claim 14, wherein entries of the second memory array are to store only payload data.

18. (Original) The apparatus of claim 14, wherein entries of the second memory array have fields to store payload data and input data to which the payload data corresponds.
19. (Original) The apparatus of claim 14, wherein the hash value generator has inputs for IP source and destination addresses and TCP source and destination port designators.
20. (Original) The apparatus of claim 19, wherein the IP source and destination address have a bit length of 32.
21. (Original) The apparatus of claim 19, wherein the IP source and destination address have a bit length of 128.
22. (Original) The apparatus of claim 14, wherein the index values and signature values each are selected from non-overlapping portions of a common hash value.
23. (Original) The apparatus of claim 14, wherein the first memory array is provided in SRAM and the second memory array is provided in DRAM.
24. (Original) The apparatus of claim 14, wherein the first and second memory arrays are commingled members of a common memory system.
25. (Currently Amended) A data retrieval method, comprising:
 - responsive to input data, generating an index value and a signature value through a hash function,
 - retrieving a first data unit using the index value from a first memory array,
 - comparing signature values in the first data unit to the generated signature value,
 - if a match occurs, retrieving a second data unit using the index value and a position of the signature value from a second memory array.

26. (Original) The data retrieval method of claim 25, further comprising comparing the input data to a portion of data in the second data unit and, if they match, outputting a second portion of the data unit.
27. (Original) The data retrieval method of claim 26, further comprising, if the input data and the data portion do not match, outputting an indication that the input data misses the memory.
28. (Original) The data retrieval method of claim 25, further comprising, if the generated signature does not match any signature in the first data unit, allocating a new entry to the input data and storing the generated signature in an unoccupied position of the first data unit.
29. (Currently Amended) The data retrieval method of claim 25, wherein the index value and generated signature value each are selected from non-overlapping portions of a common hash value.
30. (Original) The data retrieval method of claim 25, wherein the input data is IP source and destination addresses and TCP source and destination port designators.
31. (Original) The data retrieval method of claim 30, wherein the IP source and destination address have a bit length of 32.
32. (Original) The data retrieval method of claim 30, wherein the IP source and destination address have a bit length of 128.
33. (Currently Amended) A data retrieval method, comprising:
responsive to input data, generating a plurality of index values and a signature value through a hash function,
for each index value:
retrieving a first data unit from a respective first memory array using a respective ~~the~~ index value,
comparing signature values in the first data unit to the generated signature value,

if a match occurs, retrieving a second data unit from a respective second memory array using the index value and a position of the signature value.

34. (Original) The data retrieval method of claim 33, further comprising comparing the input data to a portion of data in the second data unit and, if they match, outputting a second portion of the data unit.

35. (Original) The data retrieval method of claim 34, further comprising, if the input data does not match any of the second data units, outputting an indication that the input data misses the memory.

36. (Original) The data retrieval method of claim 33, further comprising, if the generated signature does not match any signature in the first data unit, allocating a new entry to the input data and storing the generated signature in an unoccupied position of the first data unit.

37. (Original) The data retrieval method of claim 33, wherein the index values and signature value each are selected from non-overlapping portions of a common hash value.

38. (Original) The data retrieval method of claim 33, wherein the input data is IP source and destination addresses and TCP source and destination port designators.

39. (Original) The data retrieval method of claim 38, wherein the IP source and destination address have a bit length of 32.

40. (Original) The data retrieval method of claim 38, wherein the IP source and destination address have a bit length of 128.